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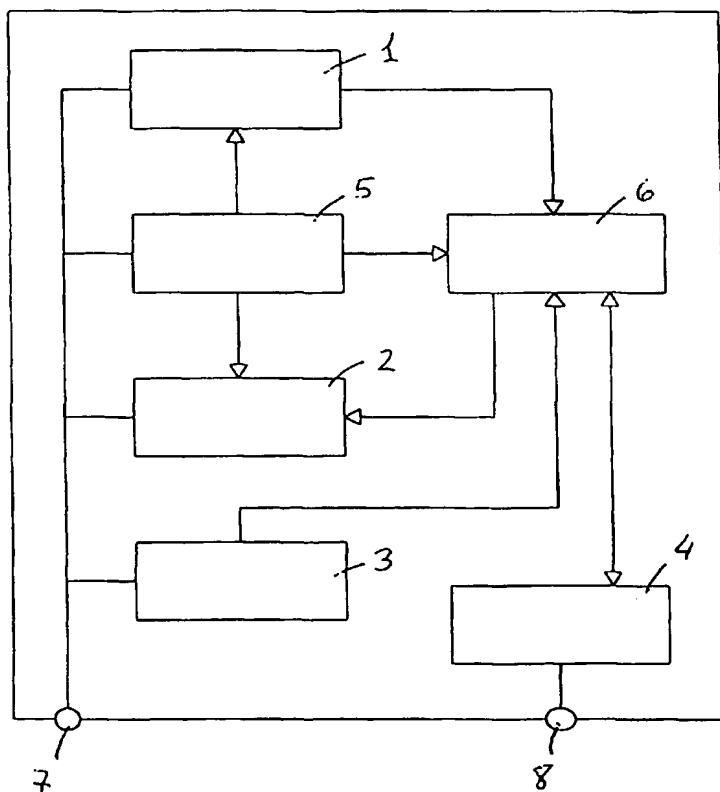
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[Continued on next page]

(54) Title: SYSTEM FOR ADAPTING A DATA AND VOICE TRANSMISSION LOCAL NETWORK TO AN ANALOG TELEPHONE LINE



(57) Abstract: The system includes a device (1) for detecting hung up/picked up line, which provides a signal showing whether the line is open or closed, a device (2) for closing or opening the line (7), which provides the data to be transmitted, a device (3) for detecting a conventional call, a module (4) for exterior connection, a power supply circuit (5), which receives electrical current from the telephone line (7) itself and control means (6) which, on receiving a signal through the connection module (4), transmit an appropriate signal to the device (2) for closing and opening the line (7), which transmits the data of a message to be transmitted.



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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

SYSTEM FOR ADAPTING A DATA AND VOICE TRANSMISSION LOCAL NETWORK TO AN ANALOG
TELEPHONE LINE

This invention relates to a system for adapting a
5 conventional telephone line to a data and voice
transmission local network, which removes the need for a
power supply external to the telephone line, but without
loss of the characteristics of the line itself.

10 BACKGROUND

Known in the art are systems for adapting a
conventional telephone line to a data and voice
transmission local network.

15 In these systems used in local networks the
signals are transmitted through the telephone line by
means of transmission devices powered from wiring and a
power supply source of their own, galvanically separate
from the telephone network.

20 An infrastructure for electrical power supply is
therefore necessary, which doubles the installation and
maintenance cost.

For example, if it is wished to connect an
appliance alarm system using the telephone network, wiring
25 must at present be installed to bring the electrical
current to the data transmitter device which will provide
the alarm signal from the appliance to be controlled.

DESCRIPTION OF THE INVENTION

30

The system of invention manages to resolve the
aforesaid disadvantages.

The system for adapting a conventional telephone
line to a data and voice transmission local network,
35 characterised in that it includes a device for detecting

hung up/picked up line, which provides a signal showing open or closed line, a device for closing or opening the line, which provides the data to be transmitted, a device for detecting a conventional call, an exterior connection module, a power supply circuit which receives electrical current from the telephone line itself, and control means which on receiving a signal through the connection module, transmit a suitable signal to the device for opening and closing the line, which transmits the message data to be transmitted, while said control means also receive conventional call signals.

The system of the invention uses the electrical power supply from the analogical telephone line itself and does not require an external power supply, which means that it can be fitted on any equipment connected to a same telephonic pair.

The system of the invention, makes good use of the public network infrastructure, that is, buses and power supply, to establish a voice and data communication, without using an external power supply or independent wiring, apart from that of the same telephonic pair installation. Any equipment which uses this technology, can carry out transmission and reception functions.

It is thus not necessary, to duplicate a communication infrastructure, saving money and resources.

Another invention advantage, consists in that it allows to be established a cost-free communication, because it allows to transmit and/or receive a data/orders string, through a telephone line without the need to make a call.

This is so, because the system is based on the fact that the device which must to transmit, takes the line (pick up) and transmits the data by the openings of the line (hang up), during a consecutives fixed periods, without the telephone switchboard recognize any dialling.

The system of the invention can be used on telephones and equipments which are connected to an analogical telephone line, and allows to do a local communication between an equipments unlimited number
5 connected to a same analogical telephonic pair, independently of their location.

Advantageously, the power supply circuit is connected to the telephone line, to the control means, to the detector device hung up/picked up line and to the
10 device for closing or opening the line.

Also advantageously, the invention system uses a communication protocol that allows to discriminate whether the communication received is for the itself equipment fitted with the system or for another one.

15 The other pieces of equipment connected to the telephonic pair, analyses the hangings up and pickings up taking place on the line, performing the data received and selecting those that pertain to them.

The transmissions are received by all the pieces
20 of equipment, and these marks, thanks to the communication protocol, whether the data are being sent to them or to other equipment. This means that specific transmissions can be made to one, more than one or all the pieces of equipment.

25

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of all that, has been outlined a sheet of drawings is attached which,
30 schematically and solely by way of non-restrictive example shows a practical case of embodiment.

In said drawings the only figure is an invention system flow chart.

DESCRIPTION OF A PREFERRED EMBODIMENT

As the figure shows, the system of the invention for adapting a conventional telephone line to a data and voice transmission local network, includes a device 1 for detecting a hung up/picked up line, which provides a signal showing open or closed line, a device 2 for closing or opening the line, which provides that the data to be transmitted, a device 3 for detecting a conventional call, an exterior connection module 4, a power supply circuit 5, which receives electrical current from the telephone line itself and control means 6.

As can be seen, the power supply circuit 5 is connected to the telephone line 7, to the control means 6, to the device 1 for detecting a hung up/picked up line and to the device 2 for closing or opening the line 7.

More specifically, the different blocks shown works as follows:

The hung up/picked up line detector informs the control means 6 (a computer CPU) of the line status; picked up or hung up; the device for closing or opening the line has the function of picking up the line 7 when the system wishes to transmit an order to the other pieces of equipment and send the corresponding codes by means of consecutive openings of variable duration; a conventional call detecting device 3 informs the control means (CPU) 6 when an external call current is received through the telephone line; the exterior connection module 4 makes the connection to other parts of the equipment in which it is located; the power supply circuit 5 obtains from the telephone line the power supply necessary to power the equipment without any need to pick up the line, thereby complying with applicable European and United States regulations; and the control means (CPU) 6 process all the information to be received or transmitted, and allows,

5

through the exterior connection module block, deliver or receiver the orders to be transmitted from an outside equipment 8 which may or may not, to be powered by the telephone line.

5

CLAIMS

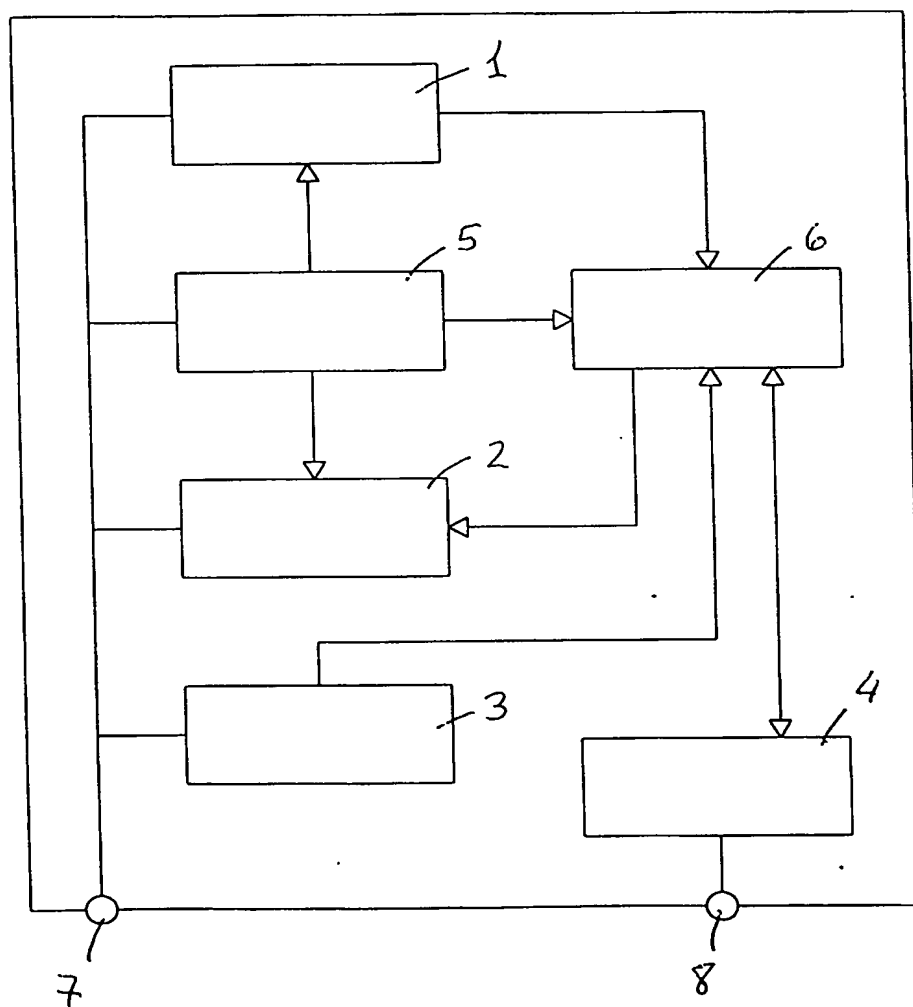
1. System for adapting a conventional telephone
5 line to a data and voice transmission local network,
characterised in that it includes a device (1) for
detecting hung up/picked up line, which provides a signal
showing open or close line, a device (2) for closing or
opening the line (7), which provides the data to be
10 transmitted, a device (3) for detecting a conventional
call, an exterior connection module (4), a power supply
circuit (5) which receives electrical current from the
telephone line itself (7), and control means (6) which on
receiving a signal through the connection module (4)
15 transmits a suitable signal to the device (2) for opening
and closing the line (7), which transmits message data to
be transmitted, while said control means (6) also receive
the conventional call signals.

20 2. System as claimed in claim 1, characterised in
that the power supply circuit (5) is connected to the
telephone line (7), to the control means (6), to the
device (1) for detecting a hung up/picked up line and to
the device (5) for closing or opening the line (7).

25

3. System as claimed in claim 1 or claim 2,
characterised in that it uses a communication protocol
which allows to discriminate whether the communication
received is for the itself equipment fitted with the
30 system or for other equipment.

FIG. 1



INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04M11/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, COMPENDEX, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 434 911 A (FLETCHER DONALD R ET AL) 18 July 1995 (1995-07-18) column 3, line 9 - line 27 column 3, line 61 - line 66 column 6, line 15 - line 59 figure 1	1-3
X	US 4 833 618 A (VERMA SHIV P ET AL) 23 May 1989 (1989-05-23) abstract figures 1,3,6 column 6, line 4 - line 62 column 7, line 7 - line 47	1-3
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☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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- *G* document member of the same patent family

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 677 947 A (OLIVER STEWART WARNER) 14 October 1997 (1997-10-14) abstract column 5, line 64 -column 6, line 24 column 6, line 59 -column 8, line 15 column 15, line 44 -column 16, line 2 figure 3 ---	1-3
X	US 4 578 536 A (OLIVER STEWART W ET AL) 25 March 1986 (1986-03-25) column 4, line 7 - line 26 column 6, line 37 -column 7, line 10 figures 1,2,5 ---	1-3
X	US 5 204 896 A (OLIVER STEWART W) 20 April 1993 (1993-04-20) abstract column 1, line 19 - line 24 column 3, line 23 - line 47 column 4, line 4 - line 24 column 4, line 61 -column 5, line 43 column 11, line 1 - line 37 ---	1-3
A	US 4 644 103 A (ROSENFELD YECHIEL) 17 February 1987 (1987-02-17) abstract column 4, line 40 -column 5, line 29 -----	1-3

INTERNATIONAL SEARCH REPORT

PCT/IB 03/00696

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5434911	A	18-07-1995	AU 689113 B2	26-03-1998
			AU 7053094 A	03-01-1995
			BR 9406740 A	12-03-1996
			CA 2164219 A1	22-12-1994
			EP 0707769 A1	24-04-1996
			JP 8511668 T	03-12-1996
			MX 9404106 A1	31-01-1995
			WO 9429998 A1	22-12-1994
US 4833618	A	23-05-1989	NONE	
US 5677947	A	14-10-1997	NONE	
US 4578536	A	25-03-1986	AU 3508184 A	07-05-1985
			BR 8407129 A	08-10-1985
			CA 1228184 A1	13-10-1987
			EP 0159351 A1	30-10-1985
			ES 8606695 A1	01-10-1986
			IT 1175882 B	15-07-1987
			JP 61500399 T	06-03-1986
			WO 8501852 A1	25-04-1985
US 5204896	A	20-04-1993	NONE	
US 4644103	A	17-02-1987	AT 56116 T	15-09-1990
			AU 600438 B2	16-08-1990
			AU 5805686 A	11-12-1986
			BR 8602517 A	27-01-1987
			CA 1251877 A1	28-03-1989
			DE 3673698 D1	04-10-1990
			EP 0205401 A2	17-12-1986
			JP 62064159 A	23-03-1987
			NO 862179 A , B,	05-12-1986
			NZ 216240 A	27-10-1989